GlobalTop Technology Inc.

EV-Kit User Manual (MT3329 series and MT3339 series)

Revision: A00

User Manual

⊹ Version History

Title:	EV-Kit User Manual(MT3329 series and MT3339 series)		
Subtitle:	**GPS Module**		
Doc Type:	**Datasheet**		
Revision	**Date**	**Author**	**Description**
A00	2012-09-04	Yingjie	Preliminary

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⚑ Caution

➢ Global position system (GPS) is the property of American Ministry of National Defense; they are fully responsible for the preciseness and maintenance of the system. Any changes they have implemented to the system in the future may enhance or deteriorate the effectiveness and performance of the received GPS data.

➢ The GPS signal might be cut-off or become seriously weakened if you operate EV-kit inside any infrastructures such as buildings, tunnels, or nearby any huge objects and/or obstruction. The kit has not malfunctioned and will operate properly again once it receives clear GPS signals (works best under open sky).

➢ To avoid damaging the intricate electronic components and circuitry, please do not place EV-Kit directly under the sun for long periods of time.

Packing Contents

➢ User Manual / Software Application Program
   ➢ CP210X USB Bridge VCP driver
   ➢ Mini GPS tool with user manual
   ➢ EV-Kit user manual
   Note: This information will be delivered by E-mail. Please contact with your dealer.

➢ USB Cable
➢ EV-Kit with Main Board、GPS Module Board
➢ External Antenna
   (Not included on models Gms-u5LP/ FGPMMOPA6B/ FGPMMOPA6C/ Gms-u6b)

Packing Contents

1. Introduction

The main purpose of this EV-Kit is to simplify the evaluation process to GPS modules and to help testers operate our products with convenience and ease.

This device can communicate with computer devices via USB, and must be used in conjunction with Mini GPS software application if you wish to record the all GPS module data such as satellites' status, time-to-first-fix (TTFF), date and time.

If you would to evaluate RTCM function, it will show you how to connect GPS simulator with the e EV-kit via RS232.

The EV-Kit was dividing to 4 series base on the various modules listed below:

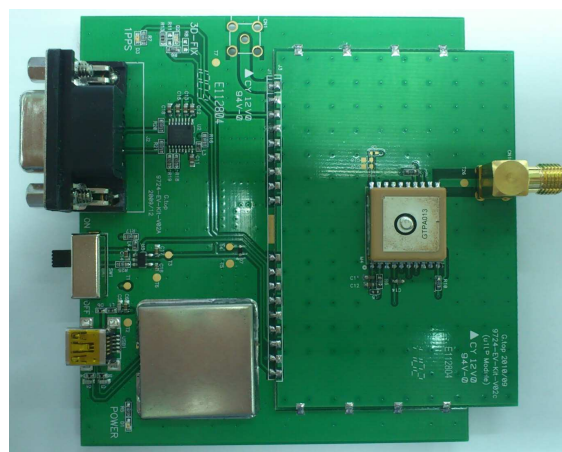**GPS module with External Antenna (series 1):**

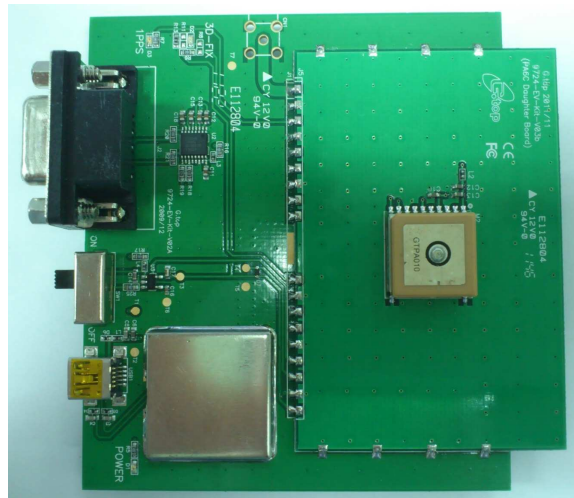**Gmm-u1, Gmm-u5LP, FGPMMOSL2B, FGPMMOSL3C, Gmm-u2P, Gmm-u5j**
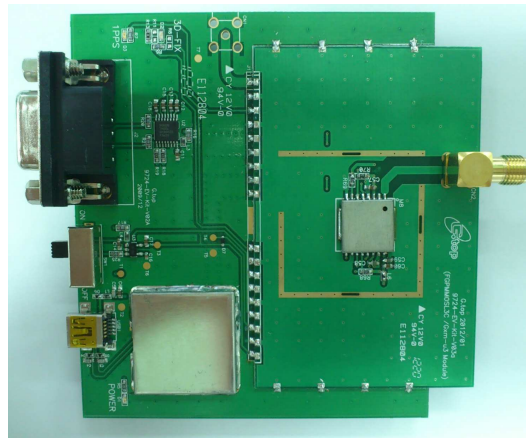
GPS Module built-in Patch Antenna and External Antenna input (series 2):

Gms-u1LP, FGPMMOPA6E, FGPMMOPA6H

GPS module built-in Patch Antenna (series 3):

Gms-u5LP, FGPMMOPA6B, FGPMMOPA6C

GPS module built-in chip antenna (series 4):

Gms-u6b
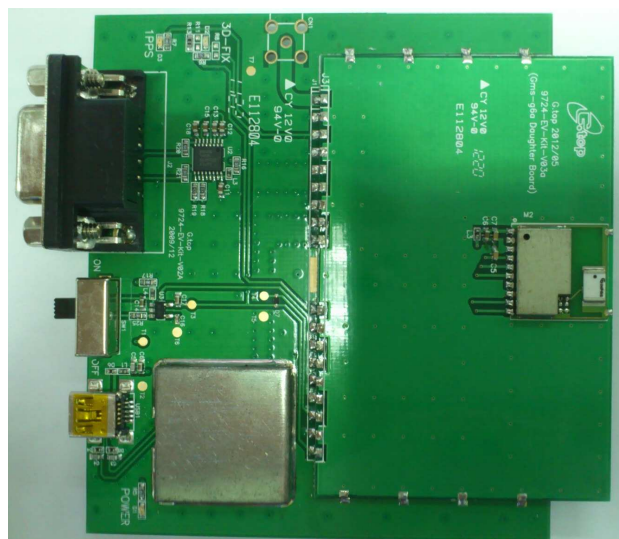
EV-Kit Features：

➢ Main Board
➢ GPS modules Board
➢ USB communication port(main communication port with PC for NEMA code)
➢ RS232 communication port
➢ SMA connector with DC output for External Antenna input
➢ Power LED Indicator (Red)
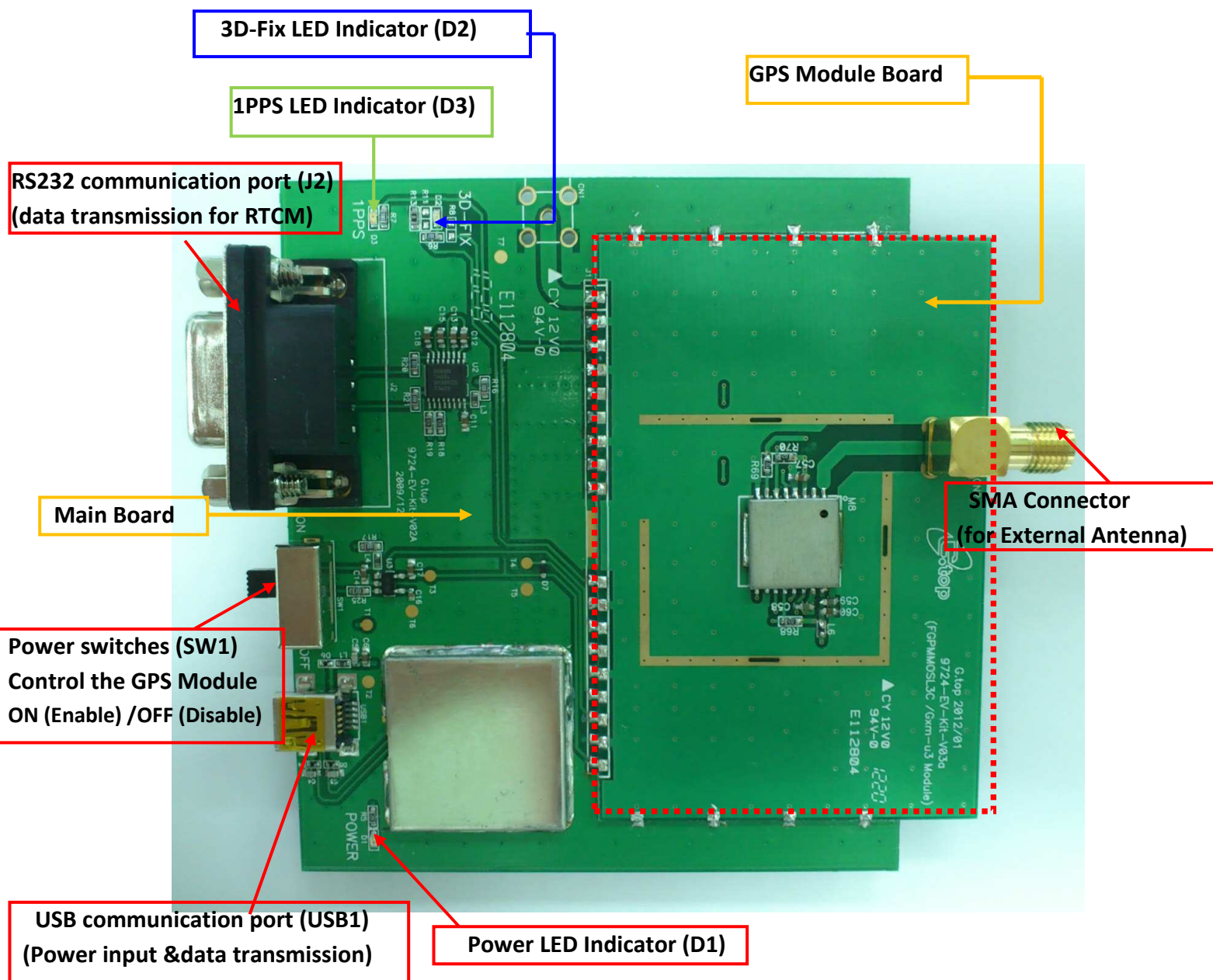➢ 3D Fix LED Indicator (Blue)
➢ 1PPS LED Indicator (Green)

2. Function Description

2.1 Hardware overview:

The EV-Kit device description as the figure show as below.

Compatible Models: (Series 1) Gmm-u1, Gmm-u5LP, FGPMMOSL2B, FGPMMOSL3C, Gmm-u2P, Gmm-u5j

3D-Fix LED Indicator (D2)

1PPS LED Indicator (D3)

GPS Module Board

RS232 communication port (J2) (data transmission for RTCM)

Main Board

SMA Connector (for External Antenna)

Power switches (SW1) Control the GPS Module ON (Enable) /OFF (Disable)

USB communication port (USB1) (Power input &data transmission)

Power LED Indicator (D1)

Compatible Model: (Series 2) Gms-u1LP, FGPMMOPA6E, FGPMMOPA6H

3D-Fix LED Indicator (D2)

GPS Module Board

1PPS LED Indicator (D3)

RS232 communication port (J2)
(data transmission for RTCM)

SMA Connector
(for External Antenna)

Main Board

Power switches (SW1)
Control the GPS Module
ON (Enable) /OFF (Disable)

USB communication port (USB1)
(Power input &data transmission)

Power LED Indicator (D1)

Compatible Model: (Series 3) Gms-u5LP, FGPMMOPA6B, FGPMMOPA6C

3D-Fix LED Indicator (D2)

1PPS LED Indicator (D3)

GPS Module Board

RS232 communication port (J2)
(data transmission for RTCM)

Main Board

Power switches (SW1)
Control the GPS Module
ON (Enable) /OFF (Disable)

USB communication port (USB1)
(Power input &data transmission)

Power LED Indicator (D1)
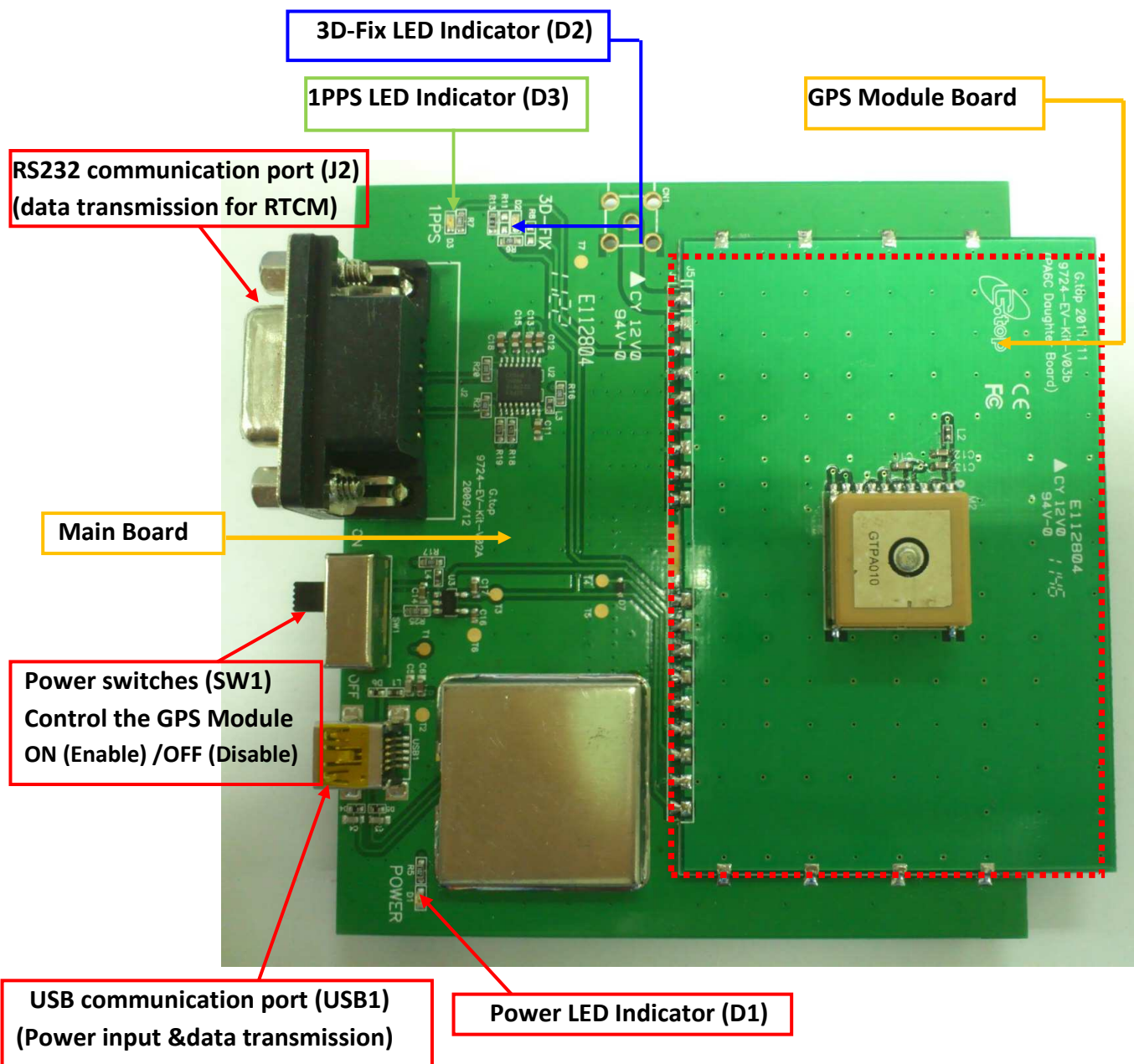
Compatible Model: (series 4) Gms-u6b

3D-Fix LED Indicator (D2)

1PPS LED Indicator (D3)

GPS Module Board

RS232 communication port (J2)
(data transmission for RTCM)

Main Board

Power switches (SW1)
Control the GPS Module
ON (Enable) /OFF (Disable)

USB communication port (USB1)
(Power input &data transmission)

Power LED Indicator (D1)
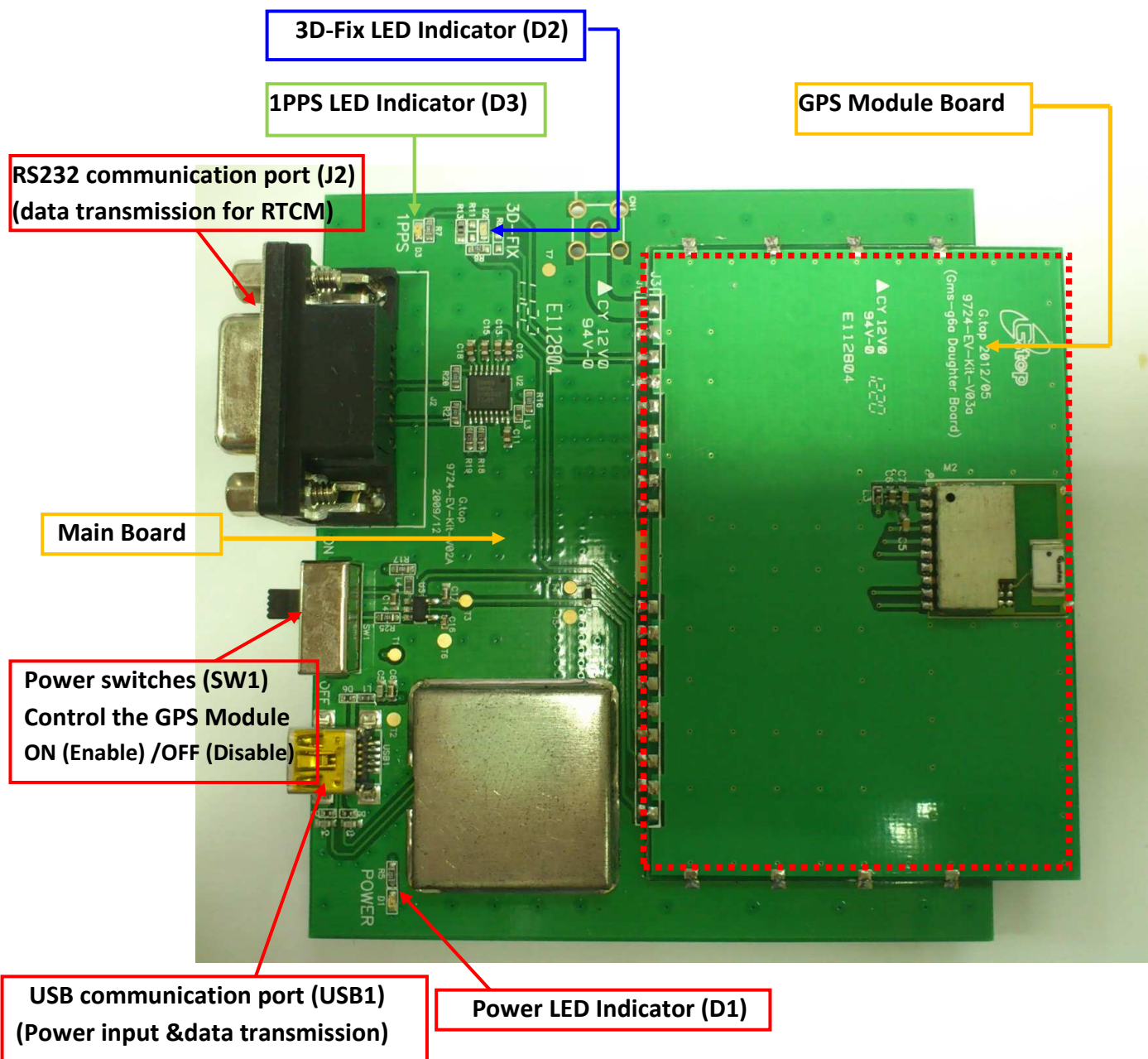
3. Operating Instruction

3.1 Function Testing

➢ **Preparation for the power and data communication**
   Compatible Model: All series

Step 1, connect USB port with PC：
   ➢ Connect the USB cable between PC and EV-Kit. The USB cable is used to
     power the EV-Kit and to transfer communication data with PC.
     Make sure Power LED Indicator (D1) light is lighted on.

Step 2, Turn on the power for GPS module：
   ➢ The Switch turns on the enable of the LDO to supply the power for GPS
     Module. Please refer to figure shown in below.

   ➢ Once Power LED Indicator(D1) lights on and main board enable
     switch(SW1) on, you can find the initial state:
      3D Fix LED Indicator (D2) blue is blinking.
      1PPS LED Indicator (D3) green is off.

   ➢ Once the module getting FIX the
       3D Fix LED Indicator (D2) blue is off.
      1PPS LED Indicator (D3) green is blinking.

   ➢ Both 3D fix and 1PPS status can be re-defined, please contact GlobalTop
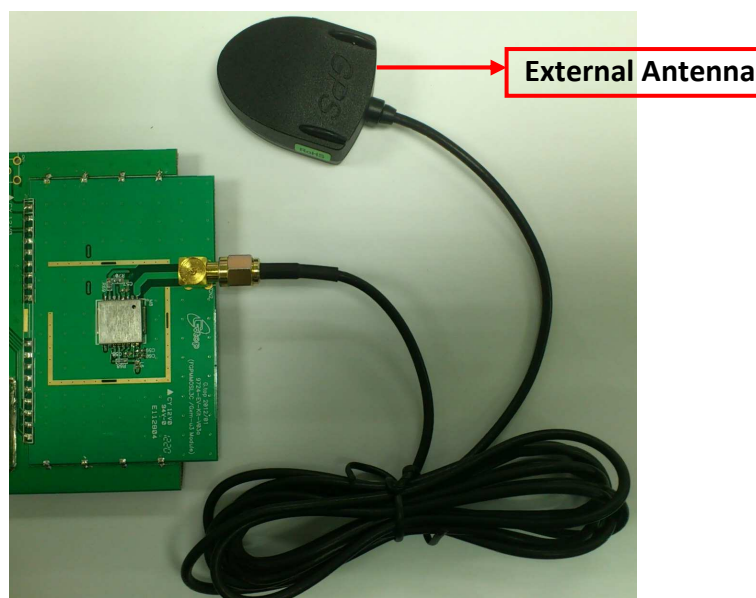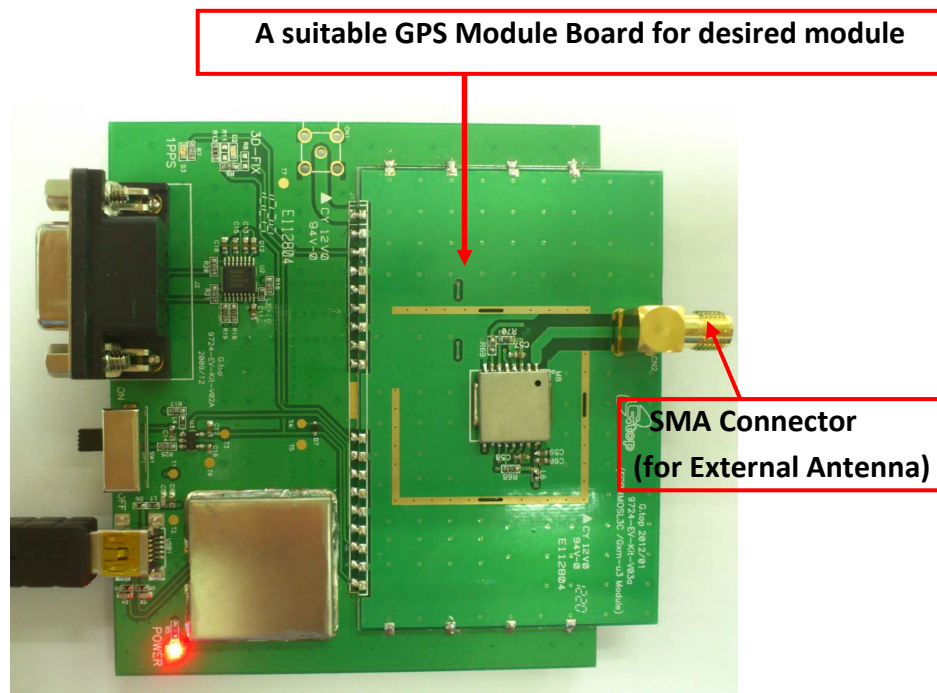   customization service.

1PPS LED Indicator (D3)

3D-Fix LED Indicator (D2)

Power switch (SW1) to ON (Enable)

Step 2

USB Data Transmission

Power Input

Step 1
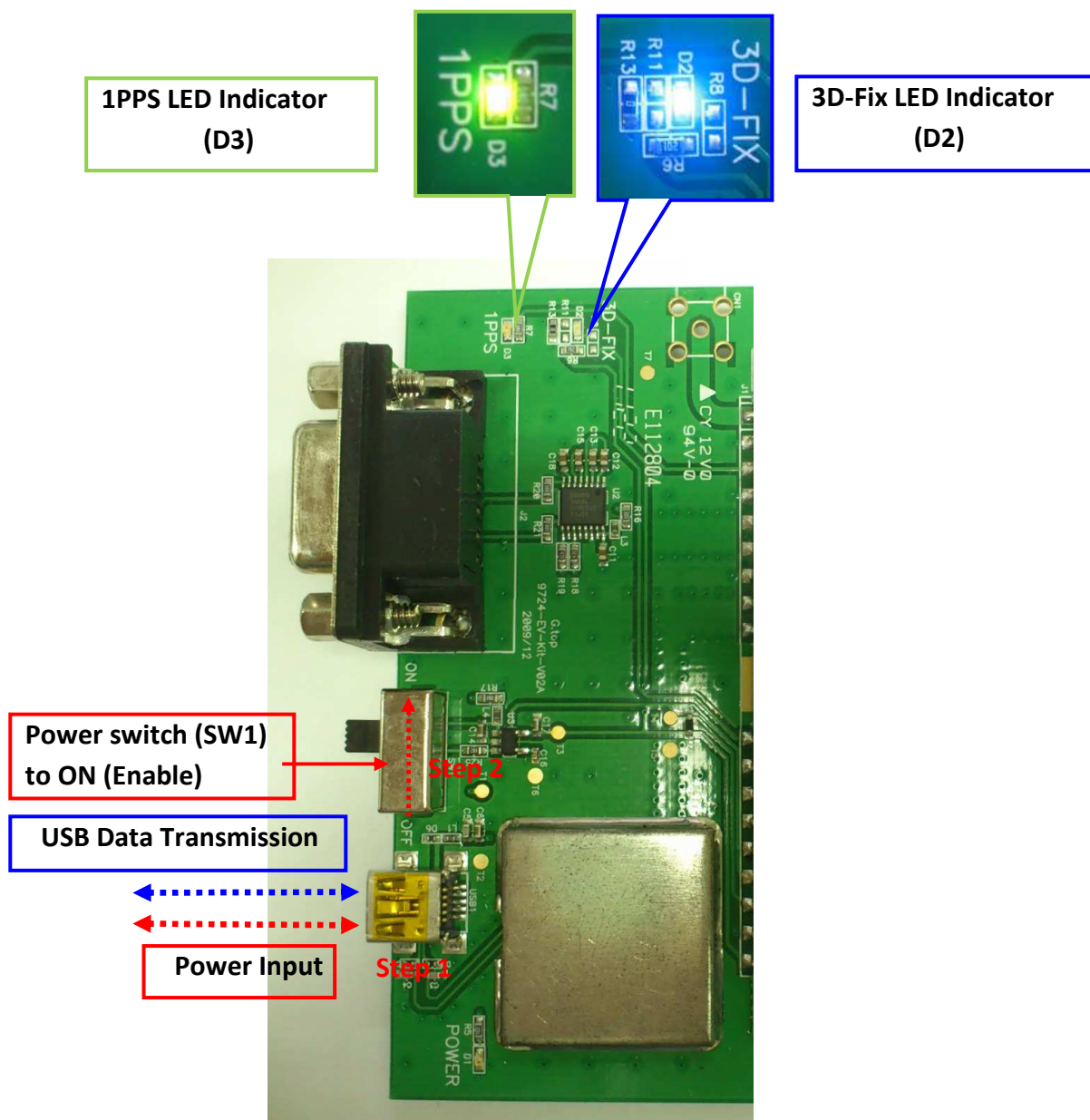
3.2 Application for the various RF reception

a. **Using External Antenna with GPS Module as model below**

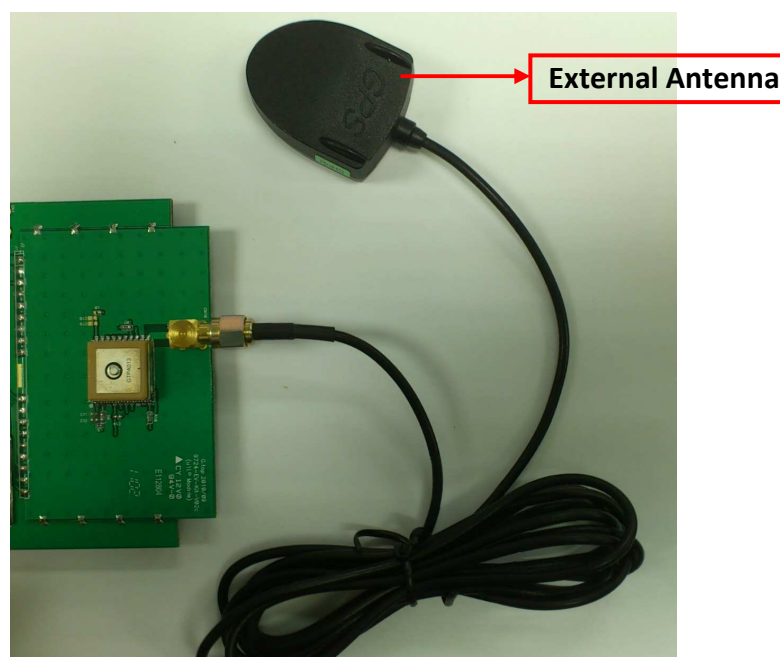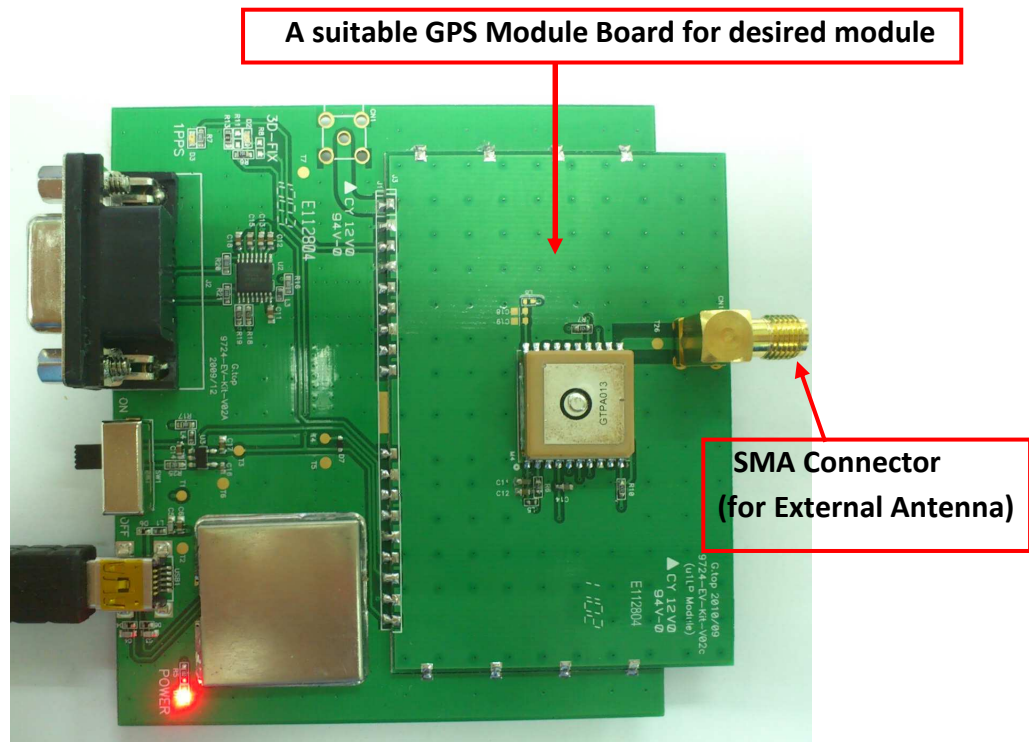**Compatible Model: (series1) Gmm-u1, Gmm-u5LP, FGPMMOSL2B, FGPMMOSL3C,**

Gmm-u2P, Gmm-u5j

A suitable GPS Module Board for desired module

SMA Connector
(for External Antenna)

External Antenna

b. **Connect External Antenna with GPS Module.**

Compatible Model (series 2): Gms-u1LP, FGPMMOPA6E, FGPMMOPA6H

As soon as customer connects an External Antenna, the internal RF switch will wire the RF signal from External Antenna. If leave it NC, it will auto-switch to built-in Patch Antenna.

Please be noted, the External Antenna should consume current I>3mA that has GPS module detected the External Antenna was connected.

A suitable GPS Module Board for desired module

SMA Connector (for External Antenna)

External Antenna

c. Connect Patch Antenna with GPS Module below.

Compatible Model: (Series 2) Gms-u5LP, FGPMMOPA6B, FGPMMOPA6C

A suitable GPS Module Board for desired module
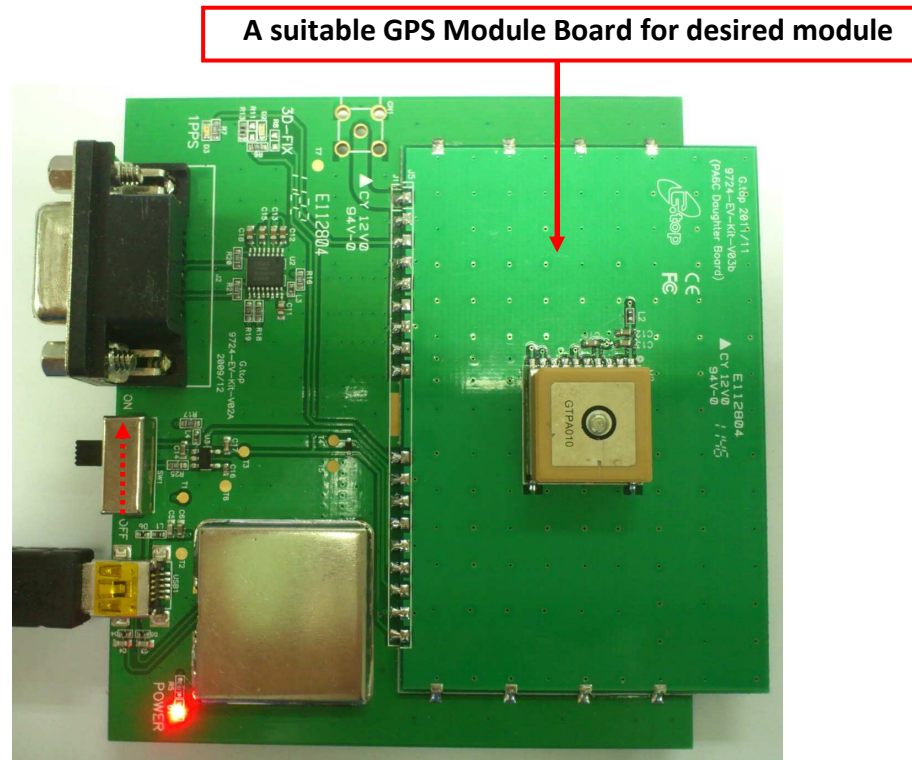
d. Using Chip Antenna with GPS Module as model below.

Compatible Model: Gms-u6b

A suitable GPS Module Board for desired module
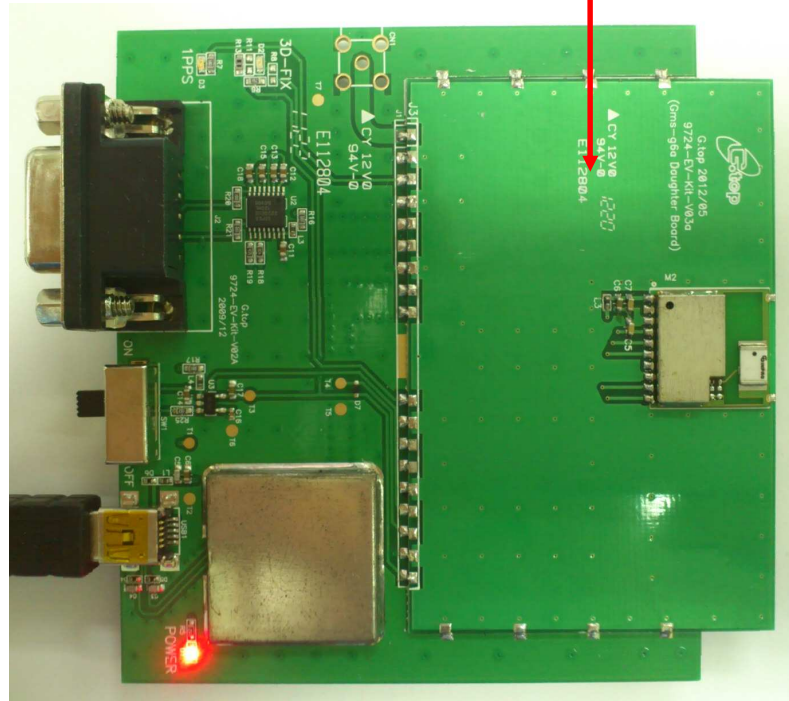
4. Software Usage

4.1 System requirement

PC：IBM, Pentium or above or compatible PC。

Operation system：Windows XP/2003/Vista

USB driver: CP210xVCPInstaller.zip

GPS viewer: Mini GPS.exe

4.2 USB Driver and GPS viewer

Please double check you have the correct USB driver before you proceed with the next step. If an incorrect driver is installed, your EV-Kit will not function!

➢ If you have purchased the EV-Kit for use with GPS Module, please make sure you have **[CP210xVCPInstaller.zip]** installation file in the package, and proceed to the next section**: [4.3 Install the USB Driver].**

➢ EV-kit USB Download

http://www.gtop-tech.com/jsf/download.jsf

➔**GPS Accessories**➔

➢ GPS viewer/Mini GPS.exe download

http://www.gtop-tech.com/jsf/download.jsf

➔**GPS Accessories**➔

4.3 Install the USB Driver

➢ Please extract the file **[CP210xVCPInstaller.zip]** and double click
[CP210xVCPInstaller.exe] to begin driver installation as the figure show in
below.
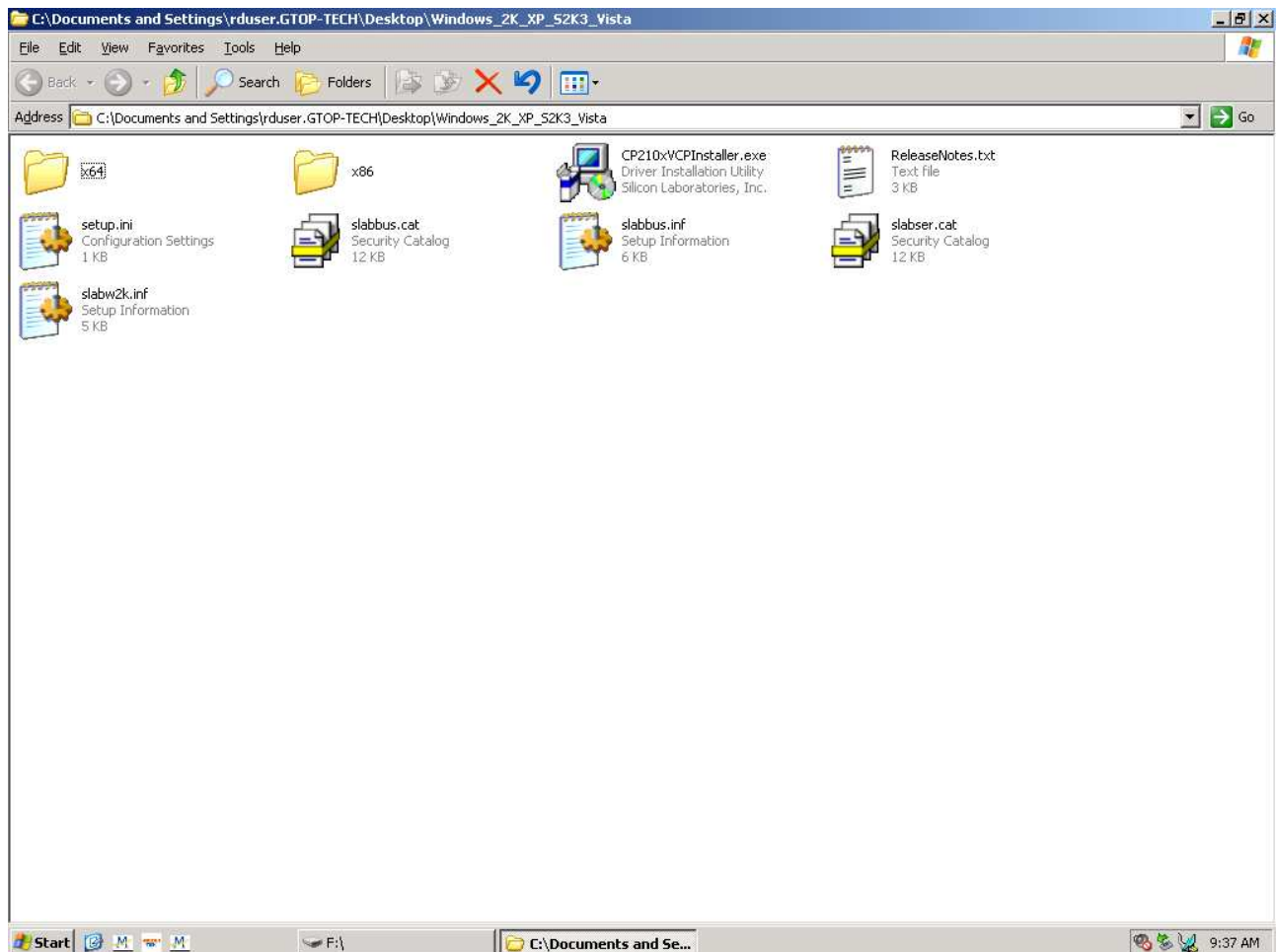
➢ Click **[Install]** as the figure show in below.
➢ After the installation is complete, you may need to restart your computer,
please follow the instructions on screen to restart your computer.
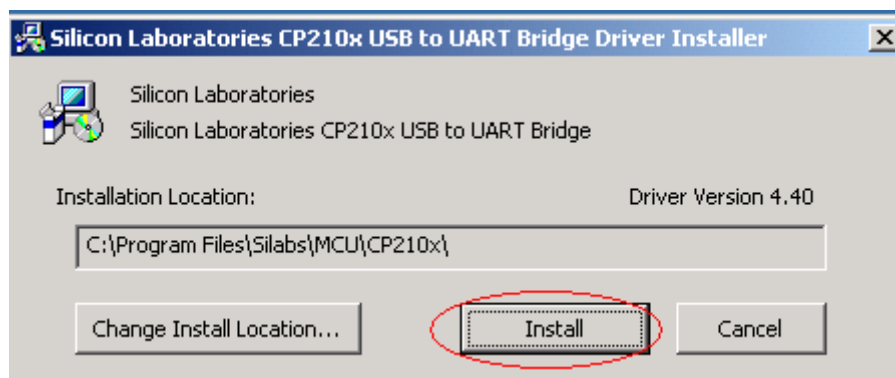
➢ After the power is on, right click **<My Computer>**, and select **<Manage>,**
please refer to figure shown in below.
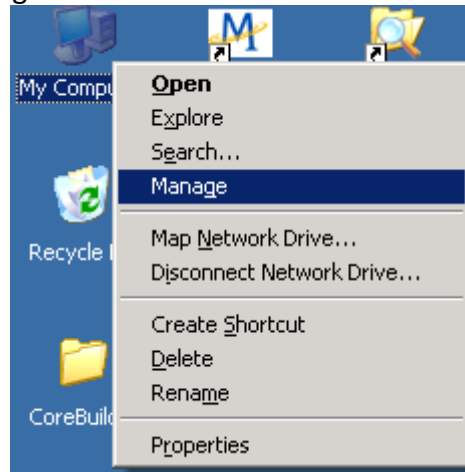
➢ Left click **<Device Manager>**, and select **<Ports (COM &LPT)>**. Check to see if
a device named **<Silicon Labs CP210x USB to UART Bridge (COM#)>** is
present. If yes, then EV-Kit is now setup and ready for use, please refer to the
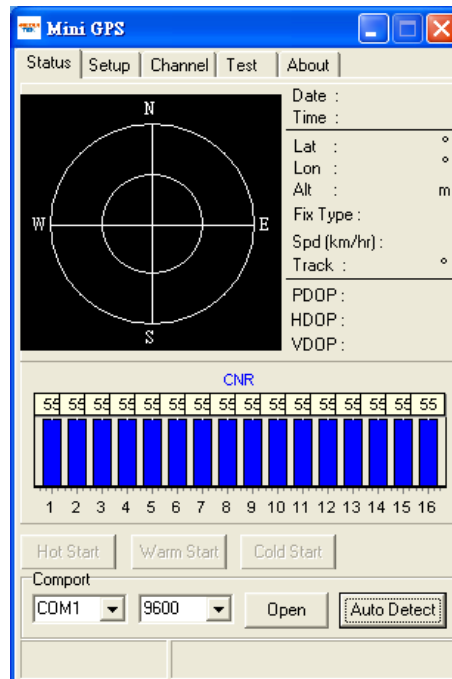figure show in below.
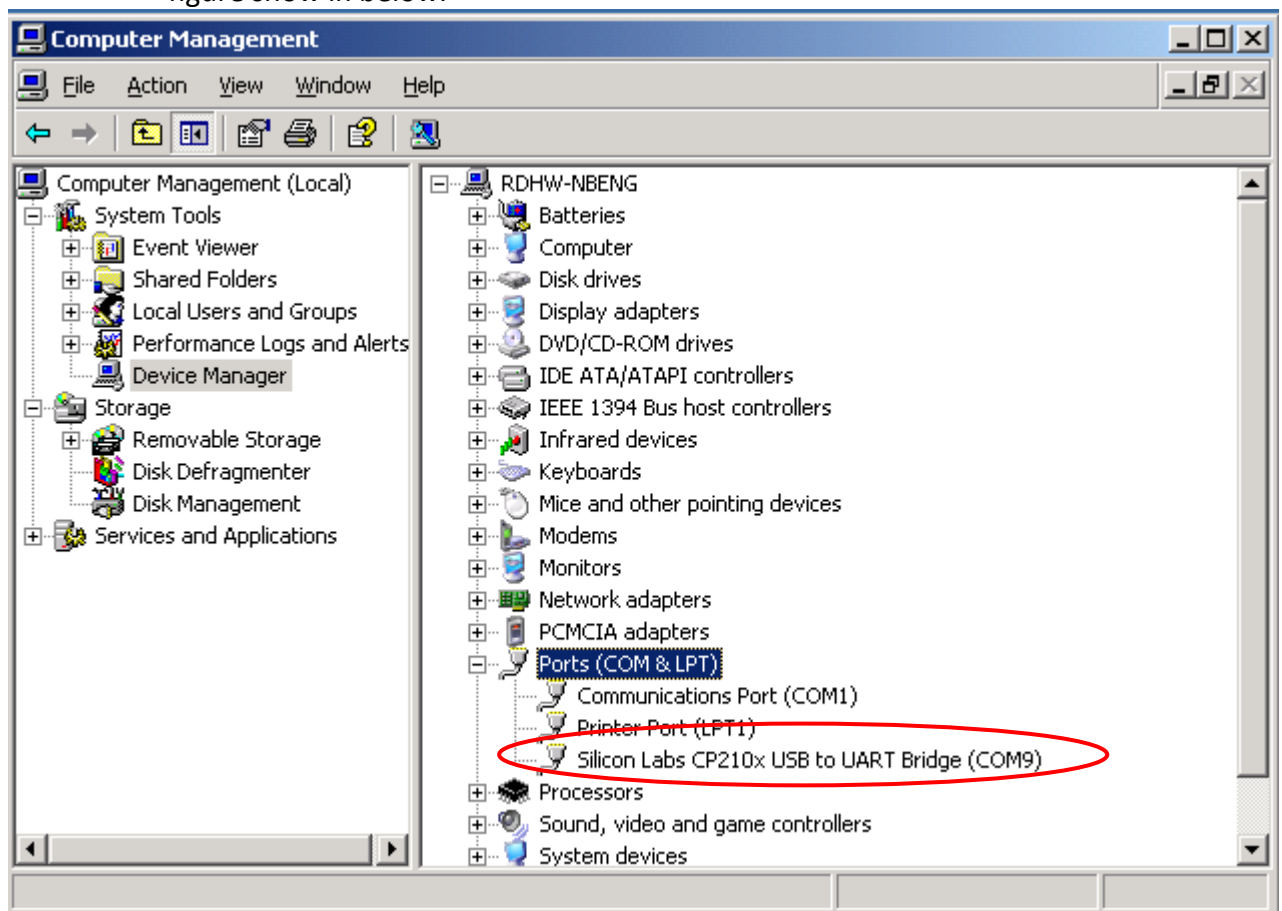
#"represents the virtual COM Port number generated for the USB connection to EV-Kit. This generated COM Port value must match the COM Port value in the program setting for the application to establish proper communication with EV-Kit.

After complete installation, please go forward to [4.4 Mini GPS Software usage]
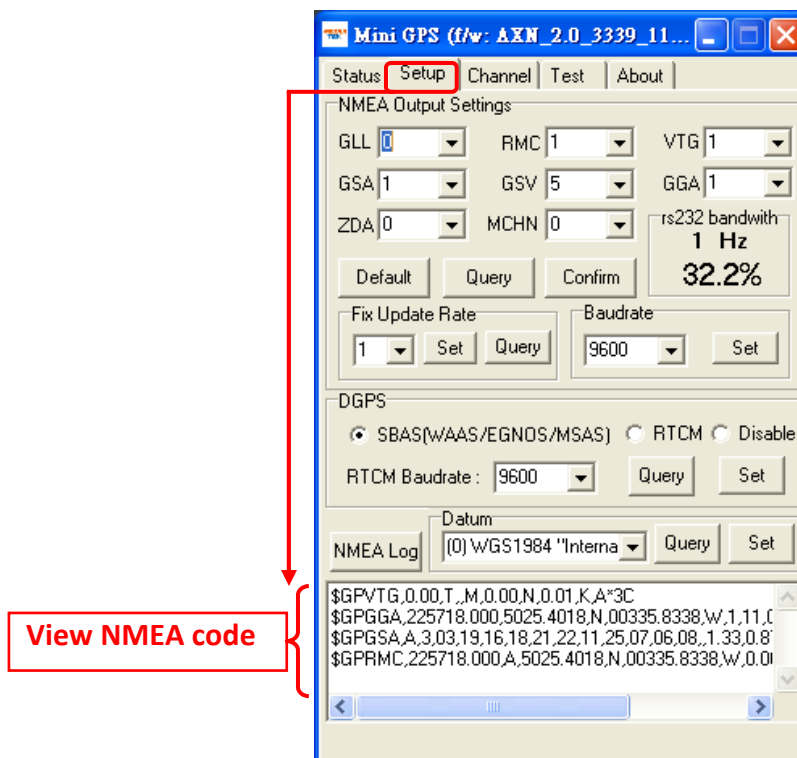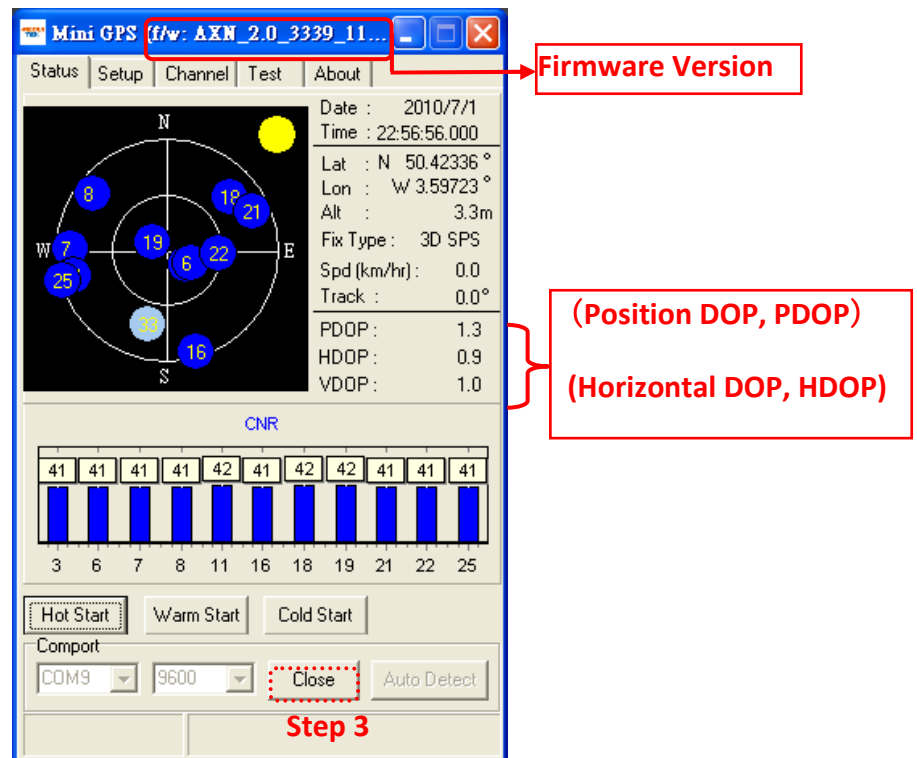
4.4 Mini GPS Software usage

➢ Double click **< Mini GPS.exe>** to start the application, the main screen of the program shown in below.
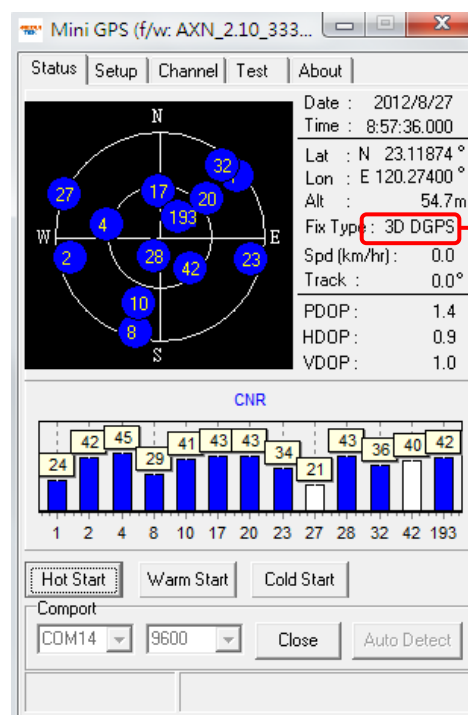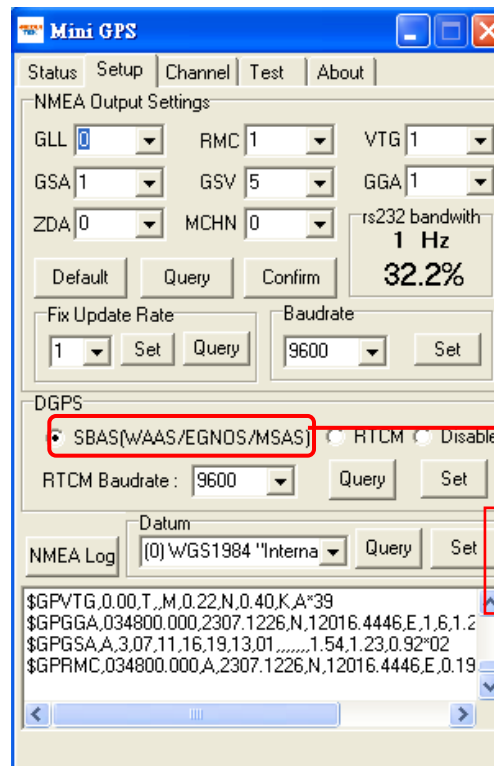

➢ Select the appropriate <**COM Port**> and < **Baud Rate** > value. Please refer to figure shown in below.
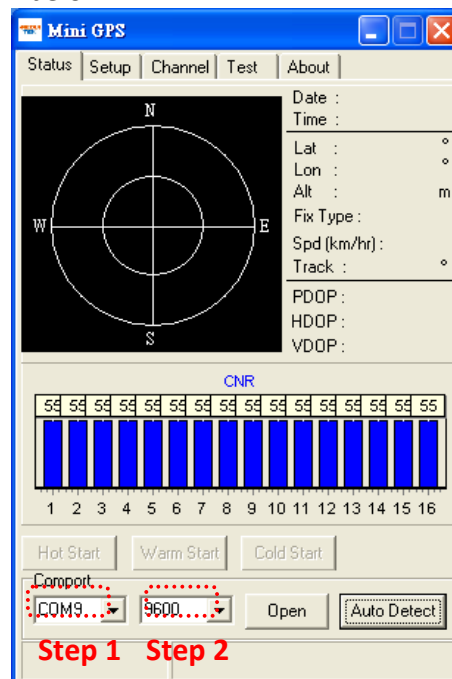
➤ Finally click <open>. Please refer to figure shown in below.

Firmware Version

（**Position DOP, PDOP**）

(Horizontal DOP, HDOP)

Step 3

View NMEA code

SBAS on by
firmware default

SBAS enable

5. RTCM Usage

5.1 RTCM hardware setting

Compatible Model: Gmm-u1, Gms-u1LP, FGPMMOSL3C, Gmm-u2P, FGPMMOPA6H

➢ **Getting the RTCM data via RS232port：**

> ➢ Connect the RS232 cable between GPS simulator and EV-Kit. The RS232 cable is used to the EV-Kit RS232 port (J2) and to GPS simulator or other RTCM serve as the figure show in below.
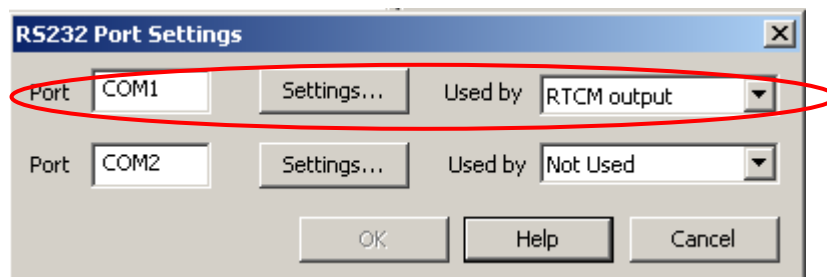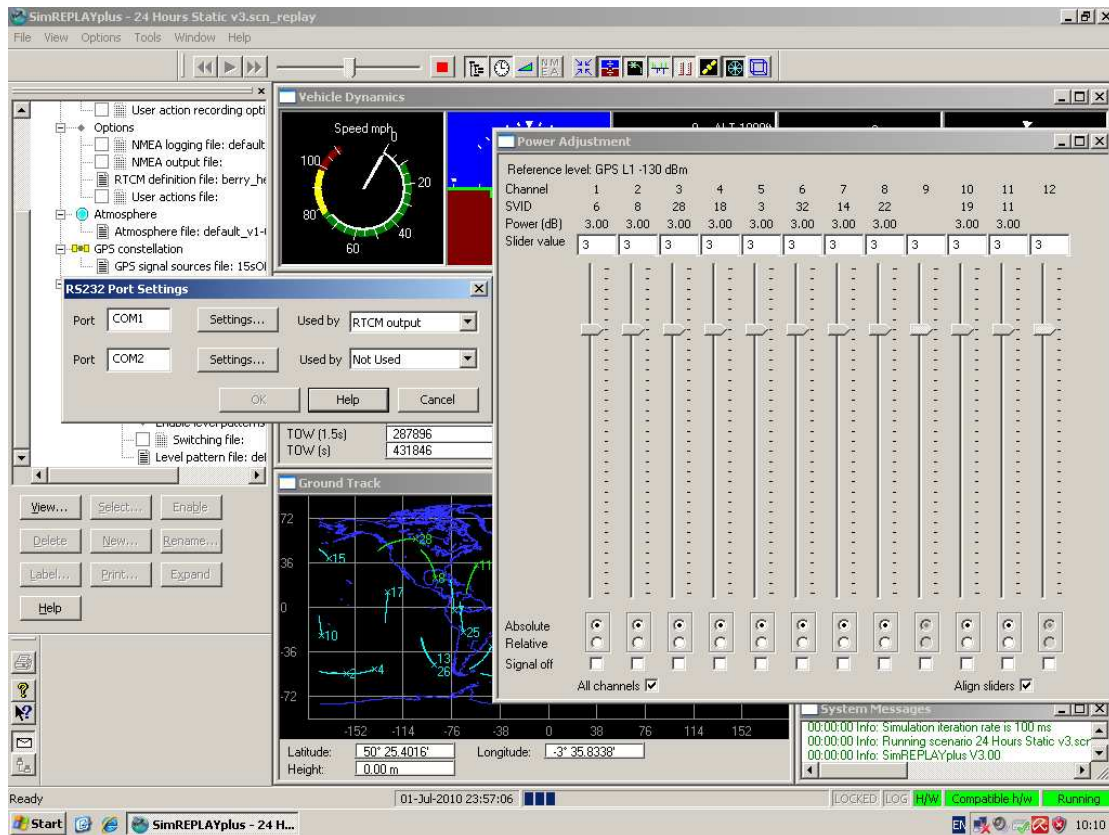

RS232 communication port (J2)

Power switch (SW1) to ON (Enable)
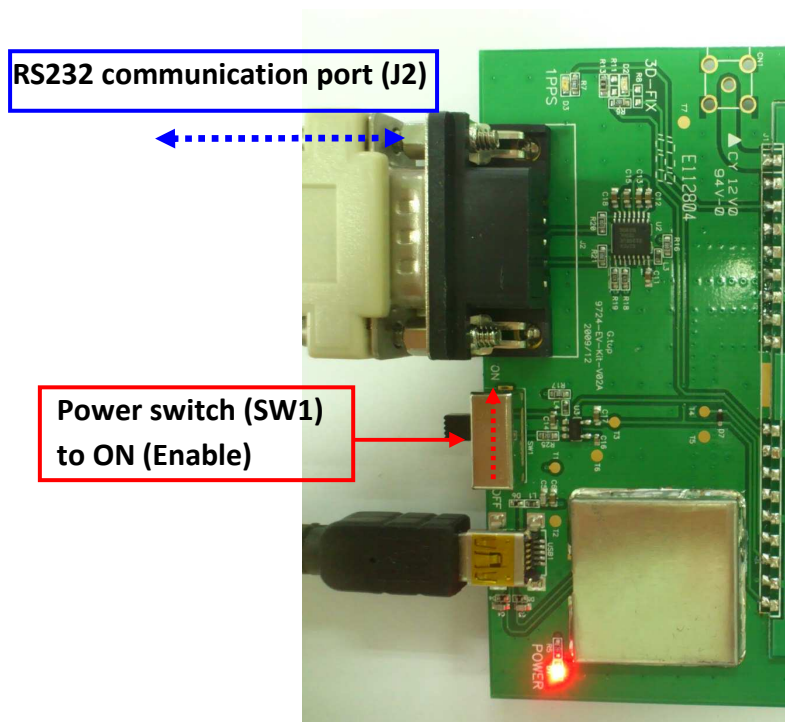
GPS Simulator Hardware set up as below:

**RS232 communication port**

5.2 RTCM software setting
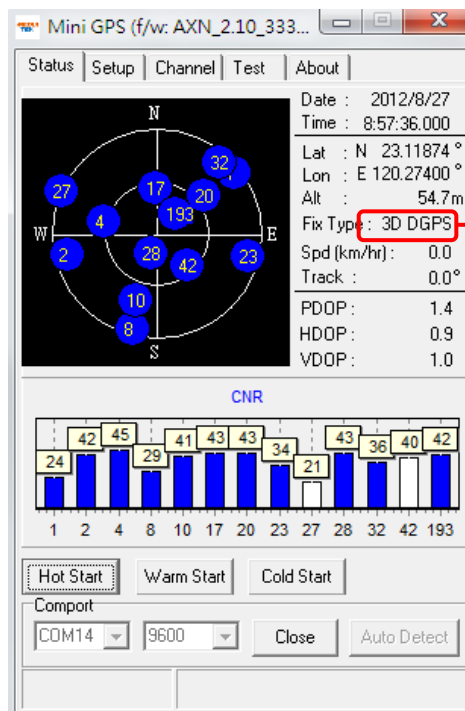
GPS Simulator software set up as below:

(If customer gets RTCM data from third party, please contact the third party for more details.)

- ➢ Please execute Mini GPS Software to check RTCM function of GPS Module if enable.
- ➢ GlobalTop GPS module has default setting RTCM disenable If RTCM enable need, please check firmware feasibility or contact GlobalTop.
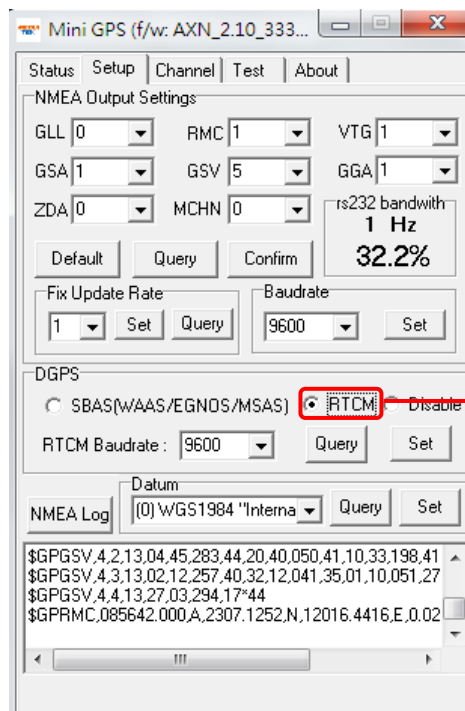
RTCM on by firmware setting

RTCM enable

6. Trouble-shooting

6.1 Problem with Setup

Problem	Possible Cause	Trouble shooting
Cannot find GPS device	USB was not setup properly.	Check to see if EV-Kit was setup properly, and make sure that the device is receiving enough power through the USB cable (Red LED should light up continuously).
No NMEA data or GPS signals	(1) USB was not setup properly. (2) COM Port or Baud rate value is incorrect.	(1) Check to see if the USB connector to PC or EV-Kit is tightly connected. (2) Double check to see if the proper COM Port and Baud rate value was selected.
Poor GPS Signal Reception	(1) If it is used inside a vehicle, the anti-sunscreen film on the windshield may interfere and weaken the GPS signal reception. (2)When the vehicle is traveling through an area with dense overhead canopy: such as forest, buildings, open tunnels etc.	For both problems, please connect the external antenna to the EV-Kit, and place the antenna on the roof top to improve signal reception.

Note: If the above troubleshooting advice does not solve your problems, please send it back to us for testing and repair.
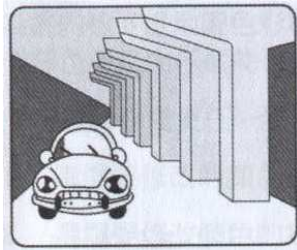
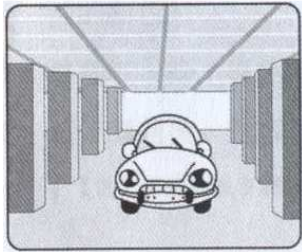## 6.2 Concerning Poor GPS Signal

It is possible to have GPS signal reception difficulties under the following situations:
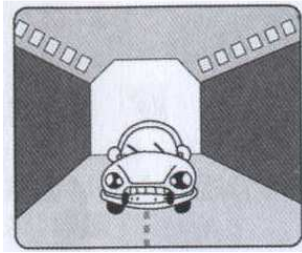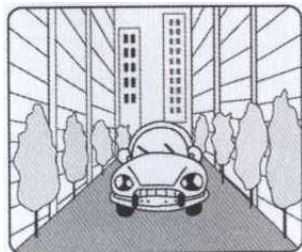
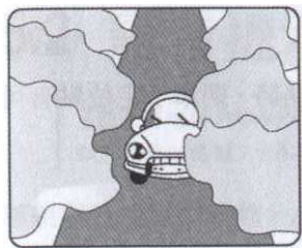Inside a tunnel, where GPS signal is blocked.

Underneath an infrastructure (like beneath a bridge), where GPS signal is blocked.

Inside a building, where GPS signal is blocked.

Next to tall buildings, where GPS signal is weakened.

Underneath forests or any other kinds of canopy where GPS signal is weakened.

■ If you use EV-Kit inside a car with anti-sunlight windshield film, the GPS signal will be severely degraded, and may result in no GPS reception.

■ GPS satellite is a property of United States Army. Sometimes they will tune-down the accuracy for unknown reasons. In such cases, the GPS position may not be as accurate.